

AMENDMENT UNDER 37 C.F.R. 1.111
Appln. No. 09/993,621

REMARKS

The present invention relates to a production method of a dehydration reaction product.

In the Office Action of September 17, 2003, the earlier telephonic restriction requirement was reiterated, claims 1 - 16 were rejected under 35 U.S.C. § 103 based on U.S. Patent 6,265,495 to Hirata et al (US '495) or based on EP 0 989 109 (EP '109). Applicants affirm the election of Group I, claims 1 - 16.

In the present Amendment, claim 1 has been amended, and new claims 18 and 19 have been added. The amendment of claim 1 is supported by the disclosure of the specification, e.g., at page 18, line 18 to page 19, line 2 and at page 19, lines 14 - 23. Claim 18 is supported, e.g., at page 21, lines 5 - 13. Claim 19 is supported, e.g., at page 21, lines 14 - 23.

Applicants respectfully submit that the present claims are non-obvious and patentable over the cited prior art, including for the reasons discussed below.

Claims 1, 3, 4 and new claims 18 and 19

The cited references do not disclose anything specifically with respect to the relation between the capacity of a reaction vessel (A) and the total length of a connecting pipe (B), nor do the cited references focus on the importance of such aspect.

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On the other hand, the present invention has been achieved by the discovery that this relation could be made to achieve unexpected advantages such as those noted below.

The presently claimed invention has been made even more specific than US '495. or EP '109 by the above amendment of the claims and the reaction apparatus which meet the relation (B^3/A) to $0.05 < (B^3/A) < 2$ gives less formation of a gel-like matter and also reaction apparatus which meet the range of A to $1 < A < 100$ gives the restriction of the formation of a gel-like matter even when the relatively large scale reaction apparatus is used, as described on page 18, line 18 to page 19 line 2 and page 19, lines 14-23 of the present specification.

The relative importance of the present invention compared with the cited art is shown, e.g., in Example 2, at page 74, line 13 to page 76, line 6, in which no gelation was observed even after 80 batches repetition.

When the reaction in accordance with Example 2 or Example 3 of the present invention is used, B should be in the range of $1.15 < B < 3.91$ to meet the range of $0.05 < (B^3/A) < 2$. In the reaction apparatus used for carrying out the method,

- (a) the diameter of each of the reaction vessel and the condenser is large,
- (b) the space for equipment of the circulation pump 142 or space for observation of flow meter 144 shown in Fig. 4 is highly desirable,
- (c) the space for hardware allowing for disassembly of reaction vessel is highly desirable for maintenance of reaction vessel,

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and B tends to be large and $0.05 < (B^3/A) < 2$ is satisfied only when the distance between reaction vessel and condenser is made to be small intentionally and the production method of the present invention is carried out in an apparatus made to meet the above range.

Claims 5-9

In an ordinary condenser, in order to equip the large number of thin heat exchanger tubes tightly to prevent loosening under the influence of vibration, the heat exchanger tubes protrude on the tubesheet surface as described on page 7, lines 10-34 of the present specification. Neither US '495 nor EP109 disclose specific information about the configuration of the condenser and the tubesheet. On the other hand, in the present invention, distillate liquid retention and formation of a gel-like matter can be prevented by making the tubesheet surface on which no substantial protrusions of the heat exchanger tubes occur by the methods such as grinding off the protruding portion, as described on page 6, line 33 to page 7, line 9 and page 28, lines 9-24 of the present description.

With respect to the use of above condenser, the above matters are demonstrated in Examples and Comparative Examples of the present specification, wherein it is seen that in accordance with the present invention, no gelation was observed.

Claims 10-16

The water separator as is required in accordance with claims 10 - 16 (illustrated in Fig. 4 or Fig. 10 of the present application) is quite different figure from that of US '495 or EP '109.

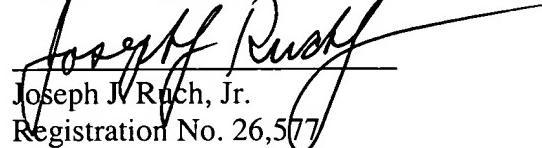
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With respect to the use of the water separator in accordance with the present invention, unexpected improved properties are demonstrated based on the Examples and Comparative Examples of the present specification, that neither bumping or gelation problems were observed in the production method of the present invention.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited; furthermore, in view of its relationship to claims 1-16 and 18-19, it is respectfully submitted that claim 17 (set forth at page 7 herein) should be rejoined and allowed also. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C. telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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